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NEWTON'S TELECOM DICTIONARY

**The Official Dictionary
of Telecommunications
Networking and
the Internet**

**16th
EXPANDED
& UPDATED
EDITION**

BY HARRY NEWTON

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Telecommunications & the Internet

**16th Updated, Expanded and Much
Improved Edition**

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Broadband Personal Communications Standards

BPCS. Consists of 120 MHz of new spectrum available for new cellular networks. Also known as wideband PCS.

Broadband Switching System See BSS

Broadcast 1. To send information to two or more receiving devices simultaneously — over a data communications network, voice mail, electronic mail system, local TV/radio station or satellite system. Broadcast involves sending a transmission simultaneously to all members of a group. In the context of an intelligent communications network, such devices could be host computers, routers, workstations, voice mail systems, or just about anything else. In the less intelligent world of "broadcast media," a local TV or radio station might use a terrestrial antenna or a satellite system to transmit information from a single source to any TV set or radio capable of receiving the signal within the area of coverage. See also Narrowcasting and Pointcasting. Contrast with Unicast, Anycast and Multicast.

2. As the term applies to cable television, broadcasting is the process of transmitting a signal over a broadcast station pursuant to Parts 73 and 74 of the FCC rules. This definition is deliberately restrictive: it does not include satellite transmission, and it does not include point-to-multipoint transmission over a wired or fiber network. In spite of the fact that the broadcast industry and the cable television industry are forever bound together in a symbiotic relationship, they are frequently at odds over policy issues. See Broadcast Station. Compare with Cablecast.

Broadcast Channel BCCH. A wireless term for the logical channel used in certain cellular networks to broadcast signaling and control information to all cellular phones. BCCH is a logical channel of the FDCCH (Forward Digital Control Channel), defined by IS-136 for use in digital cellular networks employing TDMA (Time Division Multiple Access). The BCCH comprises the E-BCCH, F-BCCH and S-BCCH. The E-BCCH (Extended-BCCH) contains information which is not of high priority, such as the identification of neighboring cell sites. The F-BCCH (Fast-BCCH) contains critical information which must be transmitted immediately; examples include system information and registration parameters. S-BCCH (System message-BCCH), which has not yet been fully defined, will contain messages for system broadcast. See also IS-136 and TDMA.

Broadcast List A list of two or more system users to whom messages are sent simultaneously. Master Broadcast Lists are shared by all system users and are set up by the System Administrator. Personal Lists are set up by individual subscribers.

Broadcast Message A message from one user sent to all users. Just like a TV station signal. On LANs, all workstations and devices receive the message. Broadcast messages are used for many reasons, including acknowledging receipt of information and locating certain devices. On voice mail systems, broadcast messages are important announcement messages from the system administrator that provide information and instructions regarding the voice processing system. Broadcast messages play before standard Voice Mail or Automated Attendant messages.

Broadcast Net A British Telecom turret feature that allows each trader single key access to a group of outgoing lines. This is designed primarily for sending short messages to multiple destinations. The "net" function allows the user to set up and amend his broadcast group.

Broadcast Quality A specific term applied to pickup

tubes of any type — vidicon, plumbicon, etc. — which are without flaws and meet broadcast standards. Also an ambiguous term for equipment and programming that meets the highest technical standards of the TV industry, such as high-band recorders.

Broadcast Station An over-the-air radio or television station licensed by the FCC pursuant to Parts 73 or 74 of the FCC Rules, or an equivalent foreign (Canadian or Mexican) station. Cable television systems are authorized by FCC rules to retransmit broadcast stations; however, such retransmission is subject to a number of restrictions:

- The cable television operator is liable for copyright royalty fees collected by the Copyright Office.
- Under certain conditions, certain broadcast stations are eligible for mandatory carriage.
- Under certain conditions, the cable operator must obtain the permission of the licensee of the broadcast station. This term includes satellite-delivered broadcast "superstations" such as WGN-TV and WWOR, but it does not include:
 - Satellite-delivered non-broadcast programming services (HBO, ESPN, C-SPAN, QVC, etc.).
 - Video services delivered by terrestrial microwave systems such as MDS, MMDS, or ITFS, unless the actual signal being delivered was originally picked up from a broadcast station.
 - Cablecasting programming originated by the cable operator or an access organization.

Broadcast Storm A pathological condition that may occur in a TCP/IP network that can cause a large number of broadcast packets to be propagated unnecessarily across an enterprise-wide network, thereby causing network overload. Broadcast storms happen when users mix old TCP/IP routers with routers supporting the new releases of TCP/IP protocol. Routers use broadcast packets to resolve IP addressing requests from stations on LANs. If a station running an old version of TCP/IP sends such a request, TCP/IP routers in an enterprise-wide network misunderstand it and send multiple broadcasts to their brother and sister routers. In turn, these broadcasts cause each router to send more broadcasts, and so on. This chain reaction can produce so many broadcast messages that the network can shut down. It should be noted that this is extremely rare and it happens only in TCP/IP networks that use two specific TCP/IP protocol releases.

Broadcast Transmission A fax machine feature that allows automatic transmission of a document to several locations.

Brochureware A pejorative term for what companies can pull off with a clever copy writer, some nice graphics, and a bit of an advertising budget. Ever read a brochure and compared it to the product? You get the idea. See Webware.

Broken Link A link to a file that does not exist or is not at the location indicated by the URL. In short, you click on a hyperlink on a Web page you're viewing, but nothing happens or you get an error message. Bingo, broken link. You've been sent somewhere that doesn't exist. This is neither exciting, nor good programming.

Broken Pipe This term is usually seen in an error message by browser programs to let the user know that the stream of information which was downloading at the time has been forcibly cut. This can occur for many reasons, most commonly because you are on a very crowded network or your access provider is experiencing heavy traffic.

Broker A company (or person) that buys and sells equipment often without taking ownership. A broker does not test or refurbish the equipment. Often, it never sees the equipment it buys and sells. Instead, it has the equipment shipped from

The initial NAPs were located in San Francisco under the operation of PacBell; Chicago, Bellcore and Ameritech, and New York (actually, Pennsauken, New Jersey), SprintLink. A fourth was awarded for MAE-East (MERIT Access Exchange) in Washington, DC, and is operated by MFS (Metropolitan Fiber Systems), which now is a business unit of Worldcom. On April 30, 1995, the NSFNet backbone was essentially shut down, and the NAP architecture effectively became the Internet. See also GigaPOP, FIX and MAE.

3. Network Access Point, an AIN term: See Network Access Point.

4. Network Access Provider. The NAP provides a transit network service permitting connection of service subscribers to NSPs. The NAP is typically the network provider that has access to the copper twisted pairs over which the DSL-based service operates.

NAPI Numbering/Addressing Plan Identifier.

NAPLPS North American Presentation-Level Protocol Syntax. A protocol for videotex text graphics and screen formats, developed by AT&T and since standardized within ANSI, based on Canada's Telidon videographics protocol.

NAR 1. Network Access Register. Centrex term describing a Central Office register which is required in order to complete a call involving access to the network outside the confines of that Centrex CO. NARs may be incoming, outgoing or two-way. NARs may be defined in support of local, intraLATA or interLATA traffic. The specifics of NAR implementation vary by Centrex provider.

2. Nothing Added Reseller. In contrast to a VAR, which is a Value Added Reseller.

3. National Accounts Representative.

Narrative Traffic Messages normally prepared in accordance with standardized procedures for transmission via optical character recognition equipment or teletypewriter. In contrast to data pattern traffic, narrative messages must contain additional message format lines.

Narrowband 1. An imprecise term. Some people think it's sub-voice grade channels capable of only carrying 100 to 200 bits per second. Others think it means lines or circuits able to carry data up to 2400 bits per second. So as lines get broader, narrowband gets broader. The latest definition of narrowband is up to and including T-1 — or 1.544 megabits per second. See also Bandwidth, Wideband, Broadband, N-ISDN and B-ISDN.

2. In cellular radio terminology, narrowband refers to the methodology of gaining more channels (and hence more capacity) by splitting FM channels into channels that are narrower in bandwidth. See NAMPS and NTACS.

3. PCS. Mobile or portable radio services which can be used to provide services to both individuals and businesses such as acknowledgement and voice paging and data services.

Narrowband Advanced Mobile Phone Service NAMPS. Narrowband AMPS. NAMPS triples the capacity of AMPS, by compressing three 10 KHz analog FM channels into a signal 30 kHz analog FM AMPs channel, along with improved signaling. Pronounced "N-AMPS."

Narrowband FM Narrowband FM is an FM signal with a bandwidth approximately equal to that of an AM signal modulated with the same audio information. Narrowband FM is used on many emergency bands because it conserves bandwidth while being clear and free from static.

Narrowband ISDN Any ISDN speed up to 1.544 Mbps, which is called PRI or PRA. But this definition is imprecise. And as speeds get faster, so the definition of narrowband ISDN means faster and faster. See N-ISDN and B-ISDN.

Narrowband Signal Any analog signal or analog representation of a digital signal whose essential spectral content is limited to that which can be contained within a voice channel of nominal 4-kHz bandwidth.

Narrowband TACS N-TACS. The narrowband version of TACS from Motorola which doubles the capacity of TACS by splitting the 25 kHz TACS channel into two 2.5 kHz channels.

Narrowcasting First, there was broadcasting. One signal went to many people. Radio and TV are the classic concepts of broadcasting. One signal — the same signal — to many people. Then came the idea of narrowcasting. One signal to a select number of people — maybe only those people who subscribed to the service and had the equipment to receive it. Then there came pointcasting. This is a fancy name for sending someone a collection of customized information — snippets of stuff that they chose from a palette of information offerings.

NARS Network Audio Response System.

NARTE National Association of Radio and Telecommunications Engineers. A worldwide, non-profit, professional organization which certifies engineers and technicians in the areas of telecommunications and electromagnetic compatibility (EMC). NARTE was founded in 1983 to address the professional testing and certification void created when the FCC reduced its role in that regard. www.narte.org

NARUC National Association of Regulatory Utility Commissioners. Members are commissioners of utility regulatory agencies of the states, the federal government and U.S. territories (i.e., the District of Columbia, Puerto Rico, and the Virgin Islands). Objectives are the advancement of uniform regulation, coordinated action, and protection of the common interests of the people with respect to utility regulation. www.erols.com/naruc

NAS NetWare Access Server. See Remote Access Server.

NASA National Aeronautics and Space Administration.

NASC Number Administration and Service Center. Provides centralized administration of the Service Management System (SMS) database of 800 numbers. The NASC keeps track of the 800 numbers that are in use, or available for use, by new 800 users.

NAT Network Address Translation. An Internet standard that enables a local area network (LAN) to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. This allows a company to shield internal addresses from the public Internet. According to Cisco, NAT has several applications. You want to connect to the Internet, but not all your hosts have globally unique IP addresses. NAT enables private IP internetworks that use nonregistered IP addresses to connect to the Internet. NAT is configured on the router at the border of a stub domain (referred to as the inside network) and a public network such as the Internet (referred to as the outside network). NAT translates the internal local addresses to globally unique IP addresses before sending packets to the outside network. You must change your internal addresses. Instead of changing them, which can be a considerable amount of work, you can translate them by using NAT. You want to do basic load sharing of TCP traffic. You can map a single global IP address to many local IP addresses by using the TCP load distribution feature. As a solution to the connectivity problem, NAT is practical only when relatively few hosts in a stub domain communicate outside of the domain at the same time. When this is the case, only a small subset of the IP addresses in the domain must be translated into globally unique IP addresses when outside communication is necessary, and these addresses can be reused when no longer in use.

The Telecommunications Act of 1996 requires that the ILECs (Incumbent Local Exchange Carriers) unbundle their NEs (Network Elements), which must be made available to the CLECs (Competitive LECs) on the basis of incremental cost. This means that CLECs will pay the additional costs the ILECs incur in making these facilities available: the words "incremental cost" are meant to signal to the ILECs that they are not to inflate the price of these facilities by adding overhead costs (e.g. the salary of the ILEC's people in charge of investor relations). UNEs are defined as physical and functional elements of the network, e.g., NIDs (Network Interface Devices), local loops, switch ports, and dedicated and common transport facilities. When combined into a complete set in order to provide an end-to-end circuit, the UNEs constitute a UNE-P (UNE-Platform). Unbundled Network Elements is a term used in negotiations between a CLEC (Competitive Local Exchange Carrier) and the ILEC (Incumbent Local Exchange Carrier) to describe the various network components that will be used or leased by the CLEC from the ILEC. These components include such things as the actual copper wire to the customers, fiber strands, and local switching. The CLEC will lease these UNEs with pricing based on the previously-signed Interconnection Agreement between the CLEC and the ILEC. Typically, a CLEC will colocate a switch at the ILEC's wirecenter, then pay for the "unbundled" local loop to make a connection to the customer. Alternately, a CLEC might lease both an unbundled local loop and an unbundled switch, and make a connection to their network at the ILEC's switch. See CLEC, ILEC, the Telecommunications Act of 1996, UNE Rate and UNE-P.

UNE Rate The fee, set by state regulators, that an ILEC charges a CLEC to unbundle network elements as part of making the local exchange market competitive. Rebundling is the process of putting UNEs back together by a CLEC to become part of a competitive service offering by him to a customer.

UNE-P Unbundled Network Element-Platform. See UNE.

Unequal Access Refers to long distance phone companies who do not take advantage of Judge Harold Greene's Equal Access divestiture provisions. Rather than a carrier selection code, unequal access carriers require you to dial a local seven digit number and punch in an authorization code. If the carrier elected to pay for Equal Access, you would just dial directly the same 10 digits you do today, and your local telephone company would give your billing number to your long distance company.

Unerase A command for getting back files you've accidentally erased. See MS-DOS.

Ungrounded Not connected to ground. PBXs, key systems and other phone systems will not work well when not connected to a solid ground because they have no place to send high voltage spikes (static electricity, lightning strikes, etc.) Improper grounding is probably the most common cause of phone system faults. Our feeling: the better the ground, the better the phone system performance. One way of grounding is the third wire of an electrical outlet. This may be OK if you check where that wire is ultimately connected to. You can ground to the metal cold water pipe. But that may connect to a plastic PVC pipe one floor below. Best to check. A ground ultimately ending firmly routed a dozen feet below the ground is best.

UNH IOL University of New Hampshire Interoperability Lab. A testing organization affiliated with the Research Computing Center of the University of New Hampshire which tests FDDI products for vendor interoperability.

Unhelpable

UNI User Network Interface. Specifications for the procedures and protocols between user equipment and either an ATM or Frame Relay network. The UNI is the physical, electrical and functional demarcation point between the user and the public network service provider. By way of example, the Frame Relay UNI involves both the user's FRAD (Frame Relay Access Device) and the carrier's FRND (Frame Relay Network Device) across a dedicated link. The ATM (Asynchronous Transfer Mode) UNI was developed and is promoted by the ATM Forum; the Frame Relay UNI, by the Frame Relay Forum.

UNI A User Network Interface A. A B-ISDN term for a SONET OC-3 link from the network to the premise, operating at 155 Mbps.

UNI B User Network Interface B. A B-ISDN term for a SONET OC-12 link from the network to the premise, operating at 622 Mbps.

UNI Interface See UNI.

UNIBOL A UNIX version of COBOL.

Unicast The communication from one device to another device over a network. In other words, a point-to-point communication. When you're Web browsing on the Internet or sending and receiving email, you are unicasting. In ATM, for instance, Unicast describes the transmit operation of a single PDU (Protocol Data Unit) by a source interface where the PDU reaches a single destination. A PDU, by the way, is a single set of data which may be in the form of a block or frame of data comprised of a fixed number of bits, as well as control information; the specifics of the PDU vary according to the nature of the native protocol which governs the process of communications between networked devices. By way of another example, the new IPv6 (Internet Protocol, version 6) specification, supports Unicast, as well as Anycast and Multicast. Contrast with Anycast, Broadcast, IP Multicast and Multicast.

Unicasting 1. Communicating from one device to another. In contrast, multicasting sends one stream of information to many. See Unicast.

2. As an ATM term, it is the transmit operation of a single PDU by a source interface where the PDU reaches a single destination.

Unicode Unicode is a 16 bit system for encoding letters and characters of all the world's languages. At 16 bits it can encode 65,536 characters. That's two raised to the 16th power. Work it out:

Multiply $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$. Sixteen-bit characters (like Unicode) are also called Wide Characters. The first 128 codes of Unicode are identical to ASCII. Just add another zero byte to each ASCII character to convert to Unicode. Unicode contains over 20,000 Han characters, which are used to represent whole words or concepts in Chinese, Japanese and Korean.

Unidirectional The transmission of information in one direction only.

Unidirectional Bus A distribution conductor or set of conductors that can transfer information in one direction only.

Unidirectional Path Switched Ring UPSR. A SONET transport method in which working traffic is transmitted in one direction. UPSR is preferred for interconnected rings with numerous signals crossing the rings.

Unified Messaging Also called integrated messaging. You walk into your office in the morning. You turn on your PC and load up your messaging software, e.g. Microsoft Outlook. That's the software you typically use to receive and send emails. Only today, you notice that instead of seeing only emails awaiting your reading pleasure, you also see faxes and